Evaluation of protection from measles in a cohort of infants through serial estimation of measles antibodies from birth to 9 months

J.L. Mathew [1,*], R.K. Ratho [2], N. Ahmed [2], S. Dutta [2]

[1] *Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, India*
[2] *PGIMER, Chandigarh, India*

Background: Measles is a significant public health problem in India and many other developing countries. A single dose of measles vaccine is administered at 9 months of age, assuming that infants are protected by transplacental antibodies till this age.

Objective: In infants born to unimmunized mothers, to (i)serially measure the level of anti-measles antibodies from birth to 9 months, (ii)study the pattern of decline, and (iii)identify possible factors that could predict lack of protection.

Methods & Materials: Institutional ethical clearance was obtained. Written informed consent was taken from women preparing to deliver babies in the hospital. Serum anti-measles IgG was measured by quantitative ELISA in 61 consecutively born infants at birth (cord blood from infant side), 14 weeks (coinciding with visit for EPI vaccination), 24 weeks (coinciding with visit for third dose Hepatitis B vaccine) and 36 weeks (just before measles vaccination). Proportion of unprotected infants (antibody titre <200 mIU/ml) was calculated at each time-point. Gestational age (preterm vs term), gestational weight (small-for-age vs appropriate-for-age), initial antibody level at birth, were evaluated as possible predictors.

Results: Anti-measles IgG antibody levels ($\pm$standard deviation) were 3235$\pm$169 IU/ml at birth, 994$\pm$127 IU/ml at 14 weeks, 208$\pm$34 IU/ml at 24 weeks, and 85$\pm$8 IU/ml at 36 weeks (Figure 1A and 1B). The proportion of unprotected infants was 0%, 11.5%, 72%, and 94% respectively. Lack of protection did not correlate with premature birth (odds ratio; 95% CI for preterm vs term was 0.90; 95%CI 0.26, 3.10 at 14 weeks, and 0.40; 95%CI 0.04, 3.56 at 24 weeks). There was also no relationship to birth weight (odds ratio; 95% CI for SGA vs AGA was 1.63; 0.33, 8.11 at 14 weeks and 0.86, 95%CI 0.26, 2.78 at 24 weeks).

Conclusion: Majority of infants lose transplacental anti-measles antibodies between 14 and 24 weeks of age, and are susceptible to measles. The lack of protection cannot be predicted by gestational age or birth weight.

The comparative analysis of the antibiotic resistance profile of fecal enterobacteria isolated from medical students in Central and Southeast Asia

I. Azizov[*], D. Babenko, A. Lavrinenko, I. Belyaev, K. Toleubekov

Karaganda State Medical University, Karaganda, Kazakhstan

Background: The problem of antibiotic resistance spreading has reached the global level requiring an immediate actions. One of the possible way to spread out such microorganism is migration, including traveling due to foreign education. The aim of this study is to analyze the antibiotic resistance of microorganisms by Enterobacteriaceae family isolated from foreign medical students (India, Pakistan) and medical students of Kazakhstan studying at Karaganda State Medical University, Kazakhstan.

Methods & Materials: From November 2011 to October 2013, 403 stains were isolated from stool samples from foreign medical students (India, Pakistan) and 109 isolates – from medical students from Kazakhstan. Bacterial identification was performed by using MALDI-TOF (Microflex, Bruker). Antimicrobial susceptibility testing has been carried out by disk diffusion and serial dilution method according to EUCAST criteria. Statistical analysis was done by WHONET 5.6 software.

Results: The antibiogramm of E. coli (as the most frequently isolated microorganism) has shown higher level of resistance in the cases of students from South-East Asia then Kazakhstan's students strains: for ampicillin (69.6% (95%CI, 63,9 - 74,7%) versus 33.3% (95% CI, 17,95- 53,26%)), ceftazidime (59.5% (95% CI, 43.5-73.7%) versus 2.5% (95% CI, 0.5-12.9%), nalidixic acid (61.6% (95% CI, 56,6-66,4%) versus 41.4% (95% CI, 30,6-53,1%). There was no difference in resistance of E.coli, isolated from two groups (from India, Pakistan and Kazakhstan) of the students for: ampicillin/sulbactam (6.3% and 5.3%, p = 0.945), cefuroxime (70% and 72.7%, p = 0.801), cefotaxime (78.3% and 61.1%, p = 0.059), gentamycin (28.6% and 9.5%, p = 0.177), ciprofloxacin (38.8% and 26.9%, p = 0.063). ESBL activity of E.coli was detected at the same level in both groups (61% and 61.7%, p = 0,997). There was no resistance to carbapemens (imipenem and meropenem).

Conclusion: Our study of antibiotic resistance of the fecal isolates from South-East and Central Asia students have shown the same level of ESBL-producers and absence of resistance to carbapenems, in spite of fact that there are number of publications about prevalence NDM-producing bacteria in Indian subcontinent. At the same time, higher level of resistance for some β-lactams and quinolones was found in group of students from South-East Asia.